

AMENDMENTS TO THE CLAIMS

Please amend the claims of the present application as set forth below.

Changes to the claims are shown by strikethrough (for deleted matter) or underlining (for added matter).

5 Claim History Summary:

Claims 1-26 were originally filed.

In a Preliminary Amendment dated May 21, 2002, claims 1-26 were cancelled and new claims 27-52 were added.

10 In the Preliminary Amendment, a Provisional Election of Species elected new claims 27-28, 30-32, 34-37, 41-46, 47-48 and 50-52.

Claims 29, 33, 38-40 and 49 were withdrawn from consideration.

In an Office Action of December 12, 2003, the Office allowed claim 52; objected to claims 35-37, 41-44 and 51; and rejected claims 27, 28, 30-32, 34, 45-48 and 50.

15 In a Response to the December 12, 2003 Office Action, Applicant amended claims 27 and 47.

In an Office Action of June 14, 2004, the Office rescinded the allowance of claim 52; objected to claims 35-37 and rejected claims 27, 28, 30-32, 34, 41-48 and 50-52.

20 Summary of Present Response

Claims 27 and 47 are currently amended; claims 35-37 are represented as new claims 53-55.

Detailed Listing of All Claims 1-55:

Claims 1-26 (Cancelled)

Claim 27 (Currently amended): A heat exchanger comprising:

- 5 a. a core having a heat exchange portion;
- b. a fluid-permeable metal tube including a motion limiter attached thereto and extending radially therefrom to limit upward or downward axial motion of the tube, wherein at least a portion of the tube extends into the core and is capable of being in contact with the core to transfer loads between the
- 10 tube and the core, to provide support to the core and to increase the stiffness of the core, and wherein the tube is positioned at least adjacent to the heat exchange portion of the core;
- c. a load bearing member positioned adjacent the core; and
- d. a first mount positioned between the tube and the load bearing
- 15 member, so that the load bearing member can receive loads from the tube via the motion limiter.

Claim 28 (Previously added): The heat exchanger of Claim 27, wherein the first

20 mount is adjustable to allow the tube to expand separately from the load bearing member.

Claim 29 (Withdrawn): The heat exchanger of claim 27, wherein the first mount is one from the group of a weld and a brazing.

Claim 30 (Previously added): The heat exchanger of Claim 27, further
5 comprising a manifold for passing a fluid from and to the core.

Claim 31 (Previously added): The heat exchanger of Claim 27, wherein the heat exchanger further comprises a second mount positioned between the tube and the core, wherein the second mount is capable of transferring loads
10 between the tube and the core.

Claim 32 (Previously amended): The heat exchanger of Claim 28, wherein the first mount comprises:

a channel defined by the load bearing member, wherein the
15 motion limiter is received by the channel such that the movement of the motion limiter is restrained by the channel.

Claim 33 (Withdrawn): The heat exchanger of claim 30, wherein the tube is substantially solid.

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Claim 34 (Previously added): The heat exchanger of Claim 31, wherein the first mount is capable of substantially restraining axial movement of the tube and

wherein the second mount is capable of substantially restraining lateral movement of the tube.

Claim 35 (Previously added): The heat exchanger of Claim 34, wherein the
5 tube further comprises a length and a core end, wherein the core end is positioned within the core and wherein the first mount is positioned along the length of the tube and the second mount is positioned near the core end of the tube.

10 Claim 36 (Previously added): The heat exchanger of Claim 35, wherein the second mount is a sliding mount capable of receiving substantially lateral loads from the tube while allowing the tube to expand along its length.

Claim 37 (Previously added): The heat exchanger of Claim 36, wherein the
15 second mount comprises a cavity defined within the core, wherein the cavity is positioned about the core end of the tube.

Claim 38 (Withdrawn): The heat exchanger of Claim 37, wherein the second mount further comprises a flared portion of the duct extending at least adjacent
20 to the cavity.

Claim 39 (Withdrawn): The heat exchanger of Claim 37, wherein the second mount further comprises a limiter extending from the cavity into the tube.

Claim 40 (Withdrawn): The heat exchanger of Claim 39, wherein the limiter
5 further comprises a limiter flared portion extending at least adjacent to the tube.

Claim 41 (Previously added): The heat exchanger of Claim 27, wherein the heat exchange portion comprises a layering of heat exchange members.

10 Claim 42 (Previously added): The heat exchanger of Claim 41, wherein the tube is positioned at least adjacent the heat exchange members, so to limit movement of the heat exchange members and to receive loads from the heat exchange members, so to increase the stiffness of the core.

15 Claim 43 (Previously added): The heat exchanger of Claim 42, wherein the tube is positioned through at least one of the heat exchange members.

Claim 44 (Previously added): The heat exchanger of Claim 43, wherein the tube defines a passage therewithin, and wherein the tube is permeable so that
20 the passage is in communication with the heat exchange portion of the core.

Claim 45 (Previously amended): The heat exchanger of Claim 27, wherein the tube has a longitudinal axis and wherein the first mount restrains the tube so to allow the transfer of loads aligned substantially with the longitudinal axis of the tube, from the tube via the motion limiter to the load bearing member.

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Claim 46 (Previously amended): The heat exchanger of Claim 45, wherein the first mount restrains the tube so to allow the transfer of torsional loads from the tube via the motion limiter to the load bearing member.

10 Claim 47 (Currently amended): A heat exchanger comprising:

a. a core having a heat exchange portion, wherein the heat exchange portion comprises a layering of heat exchange members, and wherein the heat exchange members are capable of being displaced substantially laterally;

15 b. a fluid-permeable metal tube having a length and including a motion limiter extending radially therefrom to limit upward or downward axial motion of the tube, wherein at least a portion of the tube extends adjacent to more than one of the heat exchange members and is capable of being in contact with the heat exchange members to transfer loads between the tube
20 and the heat exchange members, to provide support to the core and to increase the stiffness of the core;

c. a load bearing member positioned adjacent the core; and

d. a first mount positioned between the tube and the load bearing member, so that the load bearing member can receive loads from the tube via the motion limiter.

5 Claim 48 (Previously amended): The heat exchanger of Claim 47, wherein the first mount comprises:

a channel defined by the load bearing member, wherein the motion limiter is received by the channel such that the movement of the motion limiter is restrained by the channel.

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Claim 49 (Withdrawn): The heat exchanger of claim 47, wherein the first mount is one from the group of a weld and a brazing.

Claim 50 (Previously added): The heat exchanger of Claim 47, wherein the
15 heat exchanger further comprises a second mount positioned between the tube and the core, wherein the second mount is capable of transferring loads between the tube and the core.

Claim 51 (Previously added): The heat exchanger of Claim 50, wherein the
20 second mount is a sliding mount capable of receiving substantially lateral loads from the tube while allowing the tube to expand along its length.

Claim 52 (Previously amended): A heat exchanger comprising:

- a. a core having a heat exchange portion;
- b. a fluid-permeable metal tube having a length and an end and including a motion limiter extending radially therefrom to limit upward or
5 downward axial motion of the tube, wherein at least a portion of the tube extends into the core so that the end of the tube is positioned within the core, wherein the tube is capable of being in contact with the core to transfer loads between the tube and the core, to provide support to the core and to increase the stiffness of the core, and wherein the tube is positioned at least adjacent to
10 the heat exchange portion of the core;
- c. a load bearing member positioned adjacent the core; and
- d. a mount positioned between the end of the tube and the core, wherein the mount is capable of transferring loads between the tube and the core.

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Claim 53 (New): A heat exchanger comprising:

- a. a core having a heat exchange portion;
- b. a tube including a motion limiter attached thereto and extending radially therefrom to limit upward or downward axial motion of the tube, wherein
20 at least a portion of the tube extends into the core and is capable of being in contact with the core to transfer loads between the tube and the core, to provide

support to the core and to increase the stiffness of the core, and wherein the tube is positioned at least adjacent to the heat exchange portion of the core;

c. a load bearing member positioned adjacent the core; and

d. a first mount positioned between the tube and the load bearing

5 member, so that the load bearing member can receive loads from the tube via the motion limiter;

wherein the tube further comprises a length and a core end, wherein the core end is positioned within the core and wherein the first mount is positioned along the length of the tube and the second mount is positioned near the core
10 end of the tube.

Claim 54 (New): The heat exchanger of Claim 53, wherein the second mount is a sliding mount capable of receiving substantially lateral loads from the tube while allowing the tube to expand along its length.

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Claim 55 (New): The heat exchanger of Claim 54, wherein the second mount comprises a cavity defined within the core, wherein the cavity is positioned about the core end of the tube.

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